

### **Listing of Claims**

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21. (Currently amended) A method of connecting a layer 2 network device with a client through a wireless network, the wireless network comprising at least one layer 3 router, the method comprising:  
    at least one layer 3 router of the wireless network receiving data packets;  
    the at least one layer 3 router of the wireless network modifying MAC addresses of the data packets so that the layer 2 network device perceives the wireless network as a layer 2 network.
22. (Previously Presented) The method of claim 21, further comprising:  
    the wireless network responding to an ARP of the layer 2 network device with the MAC address of the client.
23. (Original) The method of claim 22, wherein the response is generated by referencing a maintained map of IP and MAC addresses of each client device.

24. (Previously Presented) The method of claim 23, wherein a source MAC address of the ARP response is a MAC address of a gateway of the wireless network.
25. (Previously Presented) The method of claim 23, wherein the maintained map is a locally maintained anti-ARP database.
26. (Previously Presented) The method of claim 21, wherein for an upstream data packet, the wireless network sets a source MAC address of the data packet to a client MAC address.
27. (Original) The method of claim 26, wherein setting a source MAC address comprises:
- consulting an AARP database; and
  - extracting a client MAC address that corresponds with the source IP address of the data packets.
28. (Previously Presented) The method of claim 26, further including:
- a gateway inspecting each data packet, detecting a match of a packet IP address with an IP address within a filtering list; and
  - modifying matched packets before forwarding with a corresponding MAC address as specified by the filtering list.
29. (Previously Presented) The method of claim 21, wherein for a downstream data packet, a gateway inspects the data packets to determine if a MAC address of any data packet matches a MAC address of the gateway, or a MAC address of a known client device.
30. (Cancel)
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33. (Previously Presented) A method of connecting a layer 2 network device with a client through a wireless network, the wireless network comprising at least one layer 3 router, the method comprising:

- the wireless network receiving data packets;

- the wireless network modifying MAC addresses of the data packets so that the layer 2 network device perceives the wireless network as a layer 2 network;

- the wireless network responding to an ARP of the layer 2 network device with the MAC address of the client by referencing a maintained map of IP and MAC addresses of each client device, wherein a source MAC address of the ARP response is a MAC address of a gateway of the wireless network.

34. (Previously Presented) A method of connecting a layer 2 network device with a client through a wireless network, the wireless network comprising at least one layer 3 router, the method comprising:

- the wireless network receiving data packets;

- the wireless network modifying MAC addresses of the data packets so that the layer 2 network device perceives the wireless network as a layer 2 network;

- the wireless network responding to an ARP of the layer 2 network device with the MAC address of the client by referencing a maintained map of IP and MAC addresses of each client device, wherein the maintained map is a locally maintained anti-ARP database.

35. (New) The method of claim 21, wherein the wireless network comprises a wireless mesh network, and the wireless network receiving data packets comprises:

a first layer 3 access node receiving data packets from a client device through a wireless link;

a layer 3 gateway receiving the data packets from at least one of the first layer 3 access node and another layer 3 access node through another wireless link;

and wherein the wireless network modifying MAC addresses of the data packets so that the layer 2 network device perceives the wireless network as a layer 2 network, comprises;

the layer 3 access node modifying MAC source addresses of the data packets from a MAC address of the client device to a MAC address of the layer 3 access node;

the layer 3 gateway modifying the MAC source addresses of the data packets from a MAC address of at least one of the first layer 3 access node and another layer 3 access node to a MAC address of the client device.

36. (New) The method of claim 35, further comprising the layer 3 gateway obtaining the MAC address of the client device, comprising:

consulting an ARP database, determining the MAC address corresponding to a queried IP address.

37. (New) The method of claim 36, wherein the wireless network comprises a distributed network of ARP servers that may query each other and synchronize their address maps to satisfy ARP queries.

38. (New) The method of claim 36, wherein ARP database comprises an address mapping table that is synchronized across multiple gateways of a wireless mesh network.

39. (New) The method of claim 33, further comprising:

a layer 3 gateway of the network receiving an ARP request on an upstream interface of the layer 3 gateway;

the layer 3 gateway determining whether an IP address in which resolution is being requested by the ARP request matches an interface address of the layer 3 gateway;

if the request does match the interface address, then the layer 3 gateway sending an ARP response with the gateway interface MAC address;

if the request doesn't match the interface address, then determining whether the IP address of the ARP request matches an IP address of a client device as determined from an AARP table;

if the request doesn't match at least one of the interface address and the IP address, then dropping the ARP request packet;

if the request does match at least one of the interface address and the IP address, then the layer 3 gateway constructing an ARP response with the MAC address set to the client device MAC address;

setting a source MAC address of the ARP response to be the client device MAC address.

40. (New) The method of claim 35, further comprising:

a layer 3 gateway of the network receiving an ARP request on an upstream interface of the layer 3 gateway;

the layer 3 gateway determining whether an IP address in which resolution is being requested by the ARP request matches an interface address of the layer 3 gateway;

if the request does match the interface address, then the layer 3 gateway sending an ARP response with the gateway interface MAC address;

if the request doesn't match the interface address, then determining whether the IP address of the ARP request matches an IP address of a client device as determined from an AARP table;

if the request doesn't match at least one of the interface address and the IP address, then dropping the ARP request packet;

if the request does match at least one of the interface address and the IP address, then the layer 3 gateway constructing an ARP response with the MAC address set to the client device MAC address;

setting a source MAC address of the ARP response to be the client device MAC address.